

Updates and management recommendations for potato and tomato late blight in Wisconsin

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On July 29, the UW disease clinic confirmed the presence of *Phytophthora infestans*, the pathogen causing Late Blight, on both leaves and fruit from a tomato sample submitted from Oregon WI. The sample was from a large home garden. The source of the late blight on the home gardener's tomato plants seems to have been from aerial dispersal and not from infected transplants from outside WI. The gardener planted primarily heirloom varieties by seed and just one variety by transplant that came through a retailer. There were approximately 35 tomato plants in the garden that appeared to have been very well cared for (but for the late blight) and were loaded with fruit. The owner was very cooperative and worked with the DATCP representative to remove and bag the infected plants. The lesions on the foliage (picture below) look to be approximately one week old. The initial infection points have expanded and the leaves have the characteristic oily, dark brown, water soaked appearance. If inoculum had come in on the one transplanted variety earlier in the season, it is unlikely that the plants would have struggled along this far to fruit set. Interestingly, the home owner had some potatoes in the garden nearby and they appeared symptomless at the time of the DATCP visit. The regulators advised the gardener to destroy/remove the potato foliage to limit risk of late blight infection. There will be follow up visits to this area to scout tomatoes and potatoes.



Photo courtesy of Adrian Barta

For conventional potato and tomato operations, it is advisable to go to a 5 day spray program with effective chemistries. For potatoes, we have Tanos, Reason, Curzate, Revus Top, Gavel, Ranman, Forum, Previcur Flex and Omega. These are all specific late blight products. All should be tank mixed with a protectant such as chlorothalonil, mancozeb or metiram (potato). The strobilurins will work but at high rates and this may not be cost effective. For tomatoes, we have Curzate, Tanos, Ranman, Forum, Presidio, Revus Top, Previcur Flex and Gavel. A complete table of fungicides for late blight accompanies this newsletter.

For organic operations, coppers are the only materials labeled for late blight control. Dr. Walt Stevenson has indicated that coppers can only slow the epidemic and

will not stop the progress of late blight. For a severely infected tomato or potato field, crop destruction may be the only option to limit further spread.

At this time, Dr. Dennis Halterman (UW-Plant Pathology) has determined that the *Phytophthora infestans* isolate is NOT consistent with type US#8. Further studies are needed to characterize this isolate.

Potato and Tomato Late Blight Fungicides 2009

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At this time, with late blight inoculum present in the state and weather conditions favoring disease, the recommended spray program is a tight 5 day interval. It is advisable to select a late blight-specific fungicide and apply in a tank mix with a contact such as chlorothalonil (which itself is good on late blight), mancozeb, or metiram (potato only).

As you consider your subsequent applications, remember to rotate modes of action to avoid development of resistance. To make this selection process easier, use the fungicide group or FRAC numbers. For example, if you selected a Group 11 strobilurin this week, choose a fungicide outside of that group for next week. A more extensive list of commercial products for each active ingredient can be found in the Commercial Vegetable Production in Wisconsin Guide A3422. All products listed here are for both potato and tomato unless specified in the comments column.

Fungicide	Active ingredient	Rate/A	Preharvest interval	Re-entry interval	Manufacturer	Fungicide Group (FRAC)	Comments
Bravo Weather Stik	chlorothalonil	1.5 pt	7 days	12 hours	Syngenta	M5	Note seasonal limitations on label and WI annual use allowances. Rate can go up to 2.0 pt/A for tomato.
Dithane 75DF	mancozeb	2.0 lb	3 days	24 hours	Dow	Y	EBDC material, do not exceed 11.2 lb a.i./A of EBDCs per growing season. Rate can go up to 3.0 lb/A for tomato.
Gavel 75DF	zoxamide + mancozeb	2.0 lb	3 days	48 hours	Dow	22 + M3	Best control when applied before disease onset, contains EBDC material.
Kocide 3000	Copper hydroxide	0.5-1.75 lb	0 days	24 hours	DuPont	M1	Can be tank-mixed with chlorothalonil or mancozeb for broad spectrum disease control.

Maneb 80WP	maneb	2.0 lb	3 days	24 hours	Cerexagri	M3	EBDC material, do not exceed 11.2 lb a.i./A of EBDCs per growing season. For tomato, Manex F4 at 1.2-2.4 qt/A.
Previcur Flex	propamocarb hydrochloride	0.7-1.2 pt	14 days	12 hours	Bayer	U	Best control when applied before disease onset, tank mix with other fungicides such as mancozeb or chlorothalonil. For tomato, rate can go up to 1.5 pt/A.
Evito 480SC	fluoxastrobin	3.8 fl oz	7 days	12 hours	Arysta	11	Follow resistance management guidelines on label.
Gem 500SC	trifloxystrobin	3.8 fl oz	7 days	12 hours	Bayer	11	Tank mix with a registered protectant such as chlorothalonil or mancozeb. For POTATO ONLY.
Headline	pyraclostrobin	6-12.0 fl oz	3 days	12 hours	BASF	11	Follow resistance management guidelines. For POTATO ONLY.
Cabrio EG	pyraclostrobin	8-16.0 oz	0 days	12 hours	BASF	11	Follow resistance management guidelines. For TOMATO ONLY.
Quadris Flowable	azoxystrobin	15.4 fl oz	14 days	4 hours	Syngenta	11	Follow resistance management guidelines. Rate for tomato is 5-6.2 fl oz/A.
Quadris Opti	azoxystrobin + chlorothalonil	1.6 pt	14 days	12 hours	Syngenta	11	Follow resistance management guidelines.
Reason 500SC	fenamidone	8.2 fl oz	14 days	12 hours	Bayer	11	Note plant back restrictions on label.
Tanos 50 DF	cymoxanil + famoxadone	8.0 oz	14 days	12 hours	DuPont	11	Must be tank mixed with a registered protectant such as chlorothalonil or mancozeb.

Forum	dimethomorph	6.0 oz	4 days	12 hours	BASF	15	May be used after vine kill for control of LB tuber infection.
Ranman 400SC	cyazofamid	2.75 fl oz	7 days	12 hours	FMC	21	Alternate Ranman with fungicides of a different mode of action.
Curzate	cymoxanil	3.2 oz	3 days	12 hours	DuPont	27	Label recommends tank-mixing with chlorothalonil or mancozeb. Rate can go higher 3.2-5.0 oz/A for tomato.
Omega	fluazinam	5.5 lf oz	14 days	48 hours	Syngenta	29	Best control when applied before disease onset, tank mix with other fungicides such as mancozeb or chlorothalonil. For POTATO ONLY.
Super-Tin 4L	triphenyltin hydroxide or TPTH	4-6.0 fl oz	7 days	48 hours	DuPont	30	Combination of TPTH with MH-30 can cause crop injury, high rates may injure sensitive varieties. For POTATO ONLY.
Revus Top	mandipropamid + difenoconazole	7.0 fl oz	14 days	12 hours	Syngenta	40 + 3	Do not make consecutive applications, apply with a non-ionic surfactant. For both potato and tomato. However, not for use on tomato varieties that have small fruits (<2 in) such as cherry or grape tomatoes.
Presidio	fluopicolide	4.0 fl oz	2 days	12 hours	Valent	43	Labeled for use on TOMATO ONLY.